



Independent Statistics & Analysis

U.S. Energy Information  
Administration

# Country Analysis Brief: Algeria

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## Overview

*Algeria is the leading natural gas producer in Africa, the second-largest natural gas supplier to Europe, and is among the top three oil producers in Africa. Algeria is estimated to hold the third-largest amount of shale gas resources in the world. However, gross natural gas and crude oil production have gradually declined in recent years, mainly because new production and infrastructure projects have repeatedly been delayed.*

Algeria is the leading natural gas producer in Africa, the second-largest natural gas supplier to Europe outside of the region, and is among the top three oil producers in Africa. Algeria became a member of the Organization of the Petroleum Exporting Countries (OPEC) in 1969, shortly after it began oil production in 1958. Algeria's economy is heavily reliant on revenues generated from its hydrocarbon sector, which account for about 30% of the country's gross domestic product (GDP), more than 95% of export earnings, and 60% of budget revenues, according to the International Monetary Fund (IMF).

Oil and natural gas export revenues amounted to almost \$63.8 billion in 2013, down from \$69.8 billion in the previous year, mainly because of lower export volumes, according to the Middle East Economic Survey (MEES). Algeria's oil and gas export revenue has allowed the country to maintain a comfortable level of foreign exchange reserves, which reached \$194 billion by the end of December 2013, according to the country's central bank.

Crude oil and gross natural gas production have gradually declined in recent years, mainly because of repeated project delays resulting from slow government approval, difficulties attracting investment partners, infrastructure gaps, and technical problems. In the past three licensing rounds, there was limited interest from investors to undertake new oil and gas projects under the government's terms. As a result, the Algerian government enacted new contractual and fiscal provisions in 2013 in hopes of attracting more foreign investment to new projects, particularly toward unconventional assets (shale oil and gas, tight gas, heavy oil, and coal bed methane). In January 2014, the government launched its first licensing round since 2011. According to PFC Energy, 31 blocks, of which 17 hold shale resources, are being offered. All blocks are expected to be awarded in 2014.



Source: U.S. Department of State

Algeria is estimated to hold the third-largest amount of shale gas resources in the world, according to an [U.S. Energy Information Administration \(EIA\) sponsored study](#). The EIA study estimates that Algeria contains 707 trillion cubic feet (Tcf) and 5.7 billion barrels of technically recoverable shale gas and oil resources, respectively. Some industry analysts are cautious about the prospects of Algeria becoming a notable shale producer. An analysis by MEES points out the obstacles Algeria will face, which include: the remote location of the shale acreage, the lack of infrastructure and accessibility to sites, water availability, the lack of roads and pipelines to move materials, and the need for more rigs because shale wells deplete quicker.

The 2013 militant attack on the In Amenas gas facility prompted security concerns about operating in Algeria's remote areas, particularly in the south. Any major disruption to Algeria's hydrocarbon production would not only be detrimental to the local economy but, depending on the scale of lost production, could affect world oil prices. Also, because Algeria is the second-largest natural gas supplier to Europe outside of the region, unplanned cuts to natural gas output could affect some European countries.

Algeria also relies on its own oil and natural gas production for domestic consumption, which is heavily subsidized. Natural gas and oil account for almost all of Algeria's total primary energy consumption. Domestic prices for oil products (diesel, gasoline, and liquefied petroleum gas) and natural gas are very low in Algeria by regional and global standards, according to the IMF. The IMF estimates that Algeria has the second-cheapest domestic price for natural gas in Africa, after

Libya, as retail prices have not changed since 2005 and are now below operational costs. The IMF estimates that the cost of the implicit subsidies on oil products and natural gas (both in the intermediary and final-use stages) amounted to \$22.2 billion in 2012, or 10.7% of GDP.

Natural gas accounts for 98% of power generation in Algeria, according to the IMF. Like natural gas, electricity prices have also been unchanged since 2005. However, the cost of gaining an electricity connection to obtain access can be time-consuming and costly. Nonetheless, more than 99% of Algeria's population has access to electricity. Algeria's government is attempting to reduce the country's dependence on natural gas in the power sector by initiating more renewable energy projects. Soneglaz, Algeria's state electricity and gas utility, has signed contracts to bring online solar projects, and they recently initiated a wind farm pilot program.

## **Oil and natural gas sector management**

*Algeria's national oil and natural gas company, Sonatrach, dominates the country's hydrocarbon sector, owning roughly 80% of all hydrocarbon production. By law, Sonatrach is given majority ownership of oil and natural gas projects in Algeria.*

Algeria's oil and natural gas industries are governed by the Hydrocarbon Act of 2005. The initial legislation established terms that guided the involvement of international oil companies (IOCs) in upstream exploration and production, midstream transportation, and the downstream sector. The original 2005 legislation was more favorable to foreign involvement than its predecessor, which was passed in 1986. However, amendments to the bill were made in 2006, and some of the favorable terms were reversed. In the 2006 amendments, Algeria's national oil company, Entreprise Nationale Sonatrach (Sonatrach), was granted a minimum equity stake of 51% in any hydrocarbon project, and a windfall profits tax was introduced for IOCs.

Over the past few years, Algeria has experienced difficulties attracting foreign investors, particularly at licensing rounds. In the country's seventh licensing round in 2008, only 4 of the available 16 blocks were awarded, 3 of 8 in 2009, and 2 of 10 in 2011. Some analysts believe that the lack of fiscal incentives to attract foreign investors to new projects, coupled with past Sonatrach corruption allegations, were to blame. Algeria's precarious security environment has also been a concern for investors.

In 2013, Algeria revised parts of the hydrocarbon law in an attempt to attract foreign investors to new projects. Amid declining hydrocarbon production and stagnant reserves, the Algerian government has stated it needs foreign partners to increase oil and gas reserves and explore new territories, such as offshore in the Mediterranean Sea and onshore areas containing shale oil and gas resources. The 2013 amendments introduced a profit-based taxation, as opposed to revenue-based and lowered tax rates for unconventional resources, according to PFC Energy. The amendments also allow for a longer exploration phase for unconventional resources (11 years compared to 7 years for conventional resources) and a longer operating/production period of 30 and 40 years for unconventional liquid and gaseous hydrocarbons, respectively (compared to 25 and 30 years for conventional liquids and gas, respectively). The amendments, however, do not

change Sonatrach's mandated role as a majority stakeholder in all upstream oil and natural gas projects.

Sonatrach owns roughly 80% of total hydrocarbon production in Algeria, while IOCs account for the remaining 20%, based on data from Rystad Energy. IOCs with notable stakes in oil and gas fields are: Cepsa (Spain), BP ([United Kingdom](#)), Eni (Italy), Repsol (Spain), Total (France), Statoil ([Norway](#)), and Anadarko (United States). Sonatrach's substantial assets in Algeria make it the largest oil and gas company not only in the country, but also in Africa. The company operates in several parts of the world, including: Africa (Mali, Niger, [Libya](#), [Egypt](#)), Europe (Spain, Italy, Portugal, United Kingdom), Latin America (Peru), and the United States.

## Security risks

*Militant groups operating in North Africa and the Sahel have presented security risks to oil and natural gas installations in the region. In January 2013, a militant group stormed Algeria's In Amenas gas facility, resulting in several casualties and a temporary suspension of gas production at the facility.*

### The In Amenas gas facility in Algeria



Source: BP

Concerns over Algeria's security environment resurfaced on January 16, 2013 when a militant group attacked the In Amenas gas facility, resulting in several worker and militant casualties. The attack reportedly damaged two of the facility's three processing trains, of which each has the capacity to process 3 billion cubic meters per year (Bcm/y), or 106 billion cubic feet per year

(Bcf/y). Gas output at In Amenas was first partially restarted at the end of February 2013 at one of the three trains. Currently, two of the three trains are operating, while the third train was still offline during the first half of 2014.

The In Amenas gas processing facility, located near the Libyan border, is jointly operated by Sonatrach, BP, and Statoil. After the incident occurred, BP and Statoil withdrew their staff from In Amenas and the In Salah gas facility (located 373 miles to the west of In Amenas), setting back plans to boost output at both projects. Some staff has since returned.

Natural gas output at In Amenas averaged 4.1 Bcm or 145 Bcf in 2013. Prior to the attack, In Amenas output averaged 7.8 Bcm/y (or 275 Bcf/y) of dry natural gas, accounting for almost 10% of Algeria's dry natural gas production and almost 16% of exports in 2012. Natural gas plant liquids (NGPL) are also produced at the In Amenas fields and averaged 43,400 barrels per day (bbl/d) in 2012, although nameplate capacity is around 60,000 bbl/d, according to MEES. Despite the absence of some personnel, production at In Salah remained relatively unchanged at 8.2 Bcm/y (290 Bcf/y) in 2013, compared with the previous year.

The In Amenas attack prompted companies to review their security at oil and gas installations in Algeria and other North African countries. The Algerian government has said it will increase security presence at all of its oil and gas facilities, particularly those in the remote south.

## Oil sector

### Reserves and exploration

*Algeria holds the third-largest amount of proved crude oil reserves in Africa, all of which are located onshore because there has been limited offshore exploration. According to Sonatrach, about two-thirds of Algerian territory remains largely underexplored or unexplored.*

According to the latest *Oil & Gas Journal* (OGJ) estimates, released in January 2014, Algeria held an estimated 12.2 billion barrels of proved crude oil reserves, an estimate that has been unchanged for many years. All of the country's proved oil reserves are held onshore because there has been limited offshore exploration. The majority of proved oil reserves are in the Hassi Messaoud province, which contains the country's oldest and largest oil field, Hassi Messaoud, located in the eastern part of the country, near the Libyan border. Hassi Messaoud is estimated to hold 3.9 billion barrels of proved and probable recoverable reserves, followed by the Hassi R'Mel field (3.7 billion barrels) and the Ourhoud field (1.9 billion barrels), according to the *Arab Oil & Gas Journal*.

According to Sonatrach, roughly two-thirds of Algerian territory remains underexplored or unexplored. Most of these areas are in the north and offshore. In the current licensing round, launched in January 2014, there are 6 northern blocks being offered, along with 7 central, 6 eastern, and 12 in western Algeria. There is also still potential to expand production in areas that

have already been exploited, particularly in the Hassi Messaoud, Illizi, and Berkin basins. According to Sonatrach, the Hassi Messaoud-Dahar province contains about 71% of the country's combined proved, probable, and possible oil reserves, while the Illizi basin, the second largest area, contains about 15%. The Illizi and Berkine basins have been home to many discoveries since the 1990s and still hold significant potential.

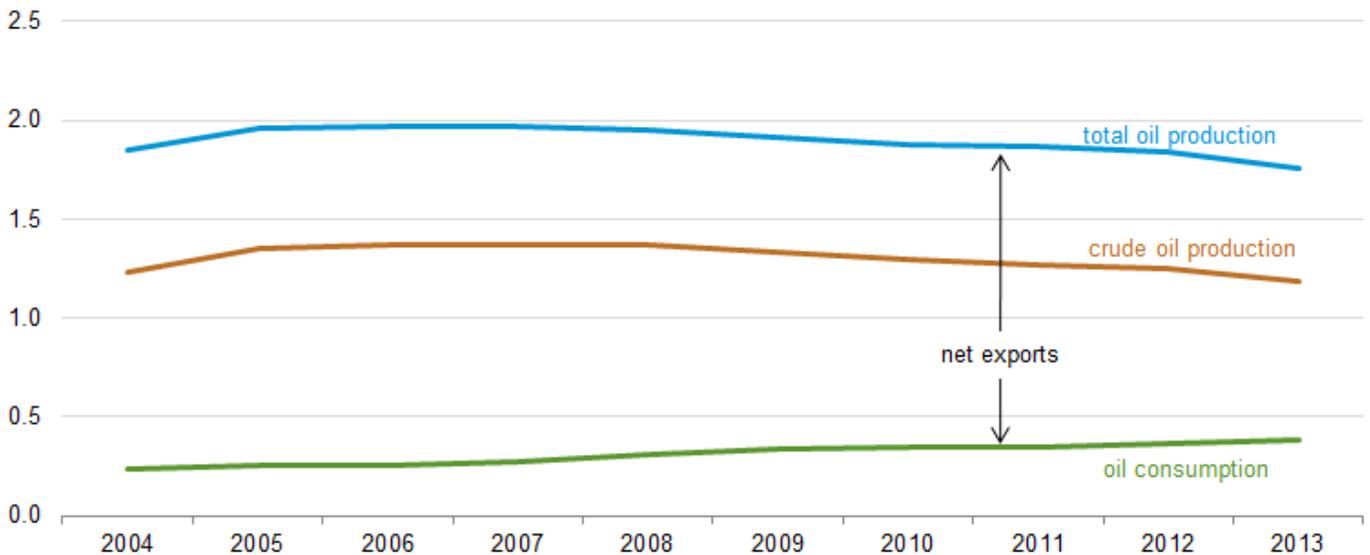
## Production and development

*The country produced almost 1.8 million bbl/d of total petroleum and other liquids in 2013, which includes crude oil, condensate, natural gas plant liquids, and refinery processing gain. The largest and oldest oil field, Hassi Messaoud, contributed more than 40% of total crude oil production, which averaged 1.2 million bbl/d in 2013.*

Algeria produced an estimated average of 1.2 million bbl/d of crude oil in 2013, slightly lower than the previous year. Combined with almost 600,000 bbl/d of non-crude oil liquids, which are not included in its OPEC quota, Algeria's total oil production averaged almost 1.8 million bbl/d in 2013.

### Petroleum and other liquids production and consumption in Algeria

million barrels per day



**eia** Note: The difference between total oil production and crude oil production is non-crude oil liquids, which include condensate, natural gas plant liquids, and refinery processing gain.  
Source: U.S. Energy Information Administration.

Algerian oil fields produce high-quality light crude oil with very low sulfur and mineral content. Sonatrach operates the largest oil field in Algeria, Hassi Messaoud, which produced roughly 500,000 bbl/d of crude oil in 2013, or more than 40% of Algeria's total crude output. Other large producing areas in Algeria include the Ourhoud and the Hassi Berkine complex. Algeria's largest oil fields are mature. Field expansions and enhanced oil recovery techniques have kept the country's oldest fields at a steady rate of production, but this trend is slowly starting to reverse.

As a result, EIA projects that Algeria's crude oil output will gradually decline at least in the short and medium term.

Algeria does not have any major crude oil projects scheduled to come onstream. There are smaller new oil projects scheduled to come onstream (Bir Seba and Timimoun), along with additional output from existing fields (Gassi Touil-Rhoude Nouss and Hassi Messaoud), but the amount is expected to fall short of what is needed to offset natural decline rates at older fields. The Algerian government has been concerned with depletion rates at oil fields, and as a result, has temporary restricted production rates at some oil fields. In 2013, temporary restrictions were placed on the production rates of the mature Ourhoud field, the new El Merk field, and other fields.

The latest notable field to start production was El Merk, located south of Hassi Messaoud in the Sahara desert. Production started in early 2013, and output of crude oil, condensate, and liquefied petroleum gas (LPG) averaged roughly 165,000 bbl/d for the first quarter of 2014. Sonatrach and Anadarko manage the project, and other companies that have been involved in the field's development include Eni, ConocoPhillips, Talisman Energy, and Maersk Oil. El Merk is also expected to produce 220 Bcf/y of associated natural gas.

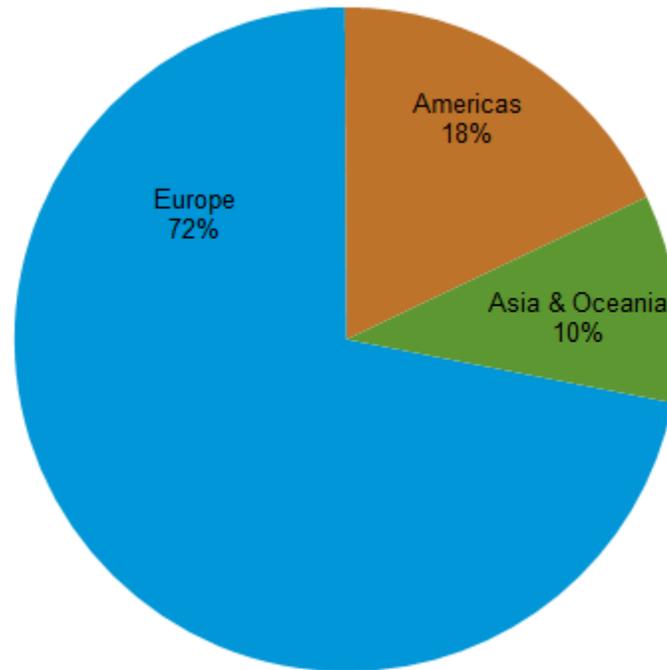
## **Crude oil exports**

*The vast majority (about 72%) of Algerian crude oil exports are sent to Europe. The United States was the single largest destination until 2013 when U.S. imports fell to 29,000 bbl/d, or by more than 75%, compared with 2012.*

Algeria exports mostly light crude oil. The country's main crude grade is the Sahara blend, which is a blend of crudes produced at fields in the Hassi Messaoud region. In 2013, Algeria exported approximately 750,000 bbl/d of crude oil, including condensate, according to estimates from EIA, Global Trade Atlas (GTA), and FACTs Global Energy. Most of Algeria's crude oil exports are sent to Europe (72%), with the remainder sent to the [Americas](#) (18%) and Asia & Oceania (10%).

The United States was one of Algeria's single largest markets for crude oil for almost a decade until 2013. U.S. crude oil imports from Algeria have substantially declined in recent years. The United States imported 29,000 bbl/d of crude oil from Algeria in 2013, which is down from its peak of 443,000 bbl/d in 2007. The growth in U.S. light, sweet crude oil production from the Bakken and Eagle Ford shale plays has resulted in a sizable decline in U.S. imports of crude grades of similar quality, such as Algeria's crude oil.

### Algeria's exports of crude oil, including condensate, by destination, 2013



 Source: U.S. Energy Information Administration, Global Trade Atlas, and FACTS Global Energy.

## Petroleum products

*Algeria has five oil refineries with a total nameplate capacity of 652,500 bbl/d. The vast majority of Algeria's domestic petroleum consumption, which averaged 380,000 bbl/d in 2013, derives from domestically refined products. Algeria's petroleum consumption has increased by an annual average of 5% over the past decade.*

Algeria has five oil refineries with a total nameplate capacity of 652,500 bbl/d, according to the *Arab Oil & Gas Journal*. The country's largest refinery, Skikda, is located along Algeria's northern coastline and is the largest refinery in Africa. It has the capacity to process 352,700 bbl/d of crude oil and condensate, accounting for more than half of Algeria's total refinery capacity. Skikda processes the Saharan blend, which derives from the Hassi Messaoud oil fields. Algeria's two other coastal refineries, Algiers and Arzew, have the capacity to process 63,400 bbl/d and 58,500 bbl/d, respectively. The country's inland refineries, Hassi Messaoud and Adrar, are connected to local oil fields and supply oil products to nearby areas.

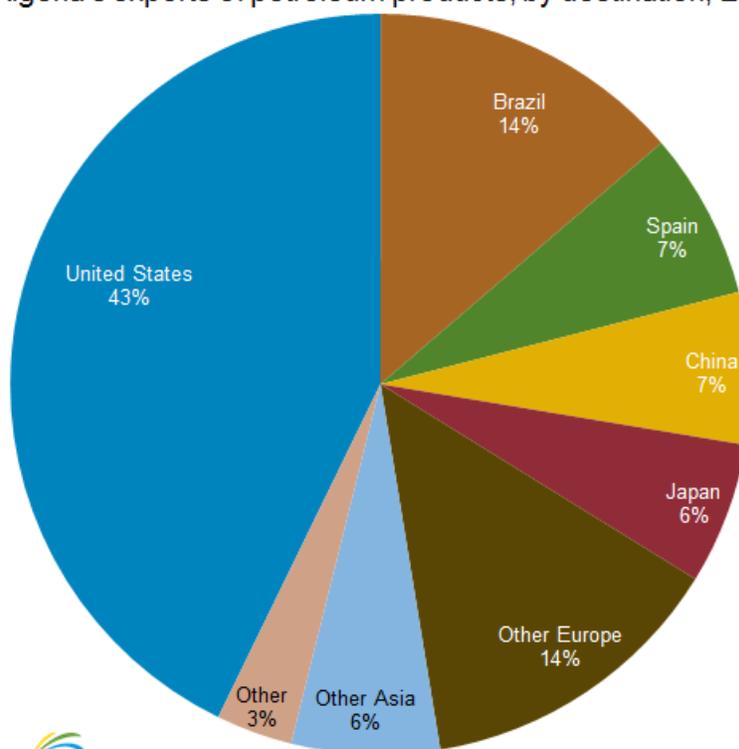
**Table 1: Oil Refineries in Algeria**

Refinery	Capacity (000 b/d)	Type	Owner
Skikda	352.7	Crude Oil/ Condensate	Sonatrach/Naftec
Hassi Messaoud	163.5	Crude Oil	Sonatrach/Naftec
Algiers (El Harrach)	63.4	Crude Oil	Sonatrach/Naftec
Arzew	58.5	Crude Oil	Sonatrach/Naftec
Adrar	14.4	Crude Oil	CNPC/Sonatrach
<b>Total</b>	<b>652.5</b>		

Note: CNPC is the China National Petroleum Company.  
Source: Arab Oil & Gas Journal

The vast majority of Algeria's domestic petroleum consumption, which averaged 380,000 bbl/d in 2013, derived from domestically refined products. Algeria's petroleum consumption has increased by an annual average of 5% over the past decade (2004 to 2013). Algeria typically produces a surplus of refined petroleum products, which is exported to global markets. According to GTA, based on data provided by Algeria's Customs Office, Algeria exported approximately 200,000 bbl/d of petroleum products in 2013, of which 43% was sent to the United States. Algeria also imports petroleum products, mainly from European countries and [Russia](#). In 2013, Algeria imported approximately 75,000 bbl/d of petroleum products, according to GTA.

**Algeria's exports of petroleum products, by destination, 2013**



Source: U.S. Energy Information Administration and Global Trade Atlas

## Oil pipelines and export terminals

Algeria uses multiple coastal terminals to export crude oil, refined products, LPG, and NGPL. These facilities are located at Arzew, Skikda, Algiers, Annaba, Oran, and Bejaia in Algeria and La Skhirra in Tunisia. Algeria's domestic pipeline network facilitates the transfer of oil from interior production fields to coastal infrastructure. The most important pipelines carry crude oil from the Hassi Messaoud field to refineries and export terminals. Algeria does not have any transcontinental export oil pipelines.

## Natural gas

### Reserves and exploration

*Algeria holds the world's tenth-largest amount of proved natural gas reserves and the third-largest technically recoverable shale gas resources. In May 2014, Algeria's Council of Ministers gave formal approval to allow shale oil and gas development.*

According to OGJ, as of January 2014, Algeria had 159 Tcf of proved natural gas reserves, the tenth-largest natural gas reserves in the world and the second largest in Africa, behind Nigeria. Algeria's largest natural gas field, Hassi R'Mel, was discovered in 1956. Located in the center of the country to the northwest of Hassi Messaoud, it holds proved reserves of about 85 Tcf, more than half of Algeria's total proved natural gas reserves. According to the *Arab Oil & Gas Journal*, Hassi R'Mel accounted for three-fifths of Algeria's gross natural gas production in 2012. The remainder of Algeria's natural gas reserves is located in associated and nonassociated fields in the southern and southeastern regions of the country.

Algeria also holds vast untapped shale gas resources. According to an [EIA-sponsored study](#) released in June 2013, Algeria contains 707 Tcf of technically recoverable shale gas resources, the third-largest amount in the world after China and Argentina. The Ghadames Basin, encompassing eastern Algeria, southern Tunisia, and western Libya, was identified as a major shale gas basin in the assessment. In May 2014, Algeria's Council of Ministers gave formal approval to allow shale oil and gas development. The Council of Ministers estimated that it would take 7 to 13 years to confirm Algeria's potential shale resources.

### Production and development

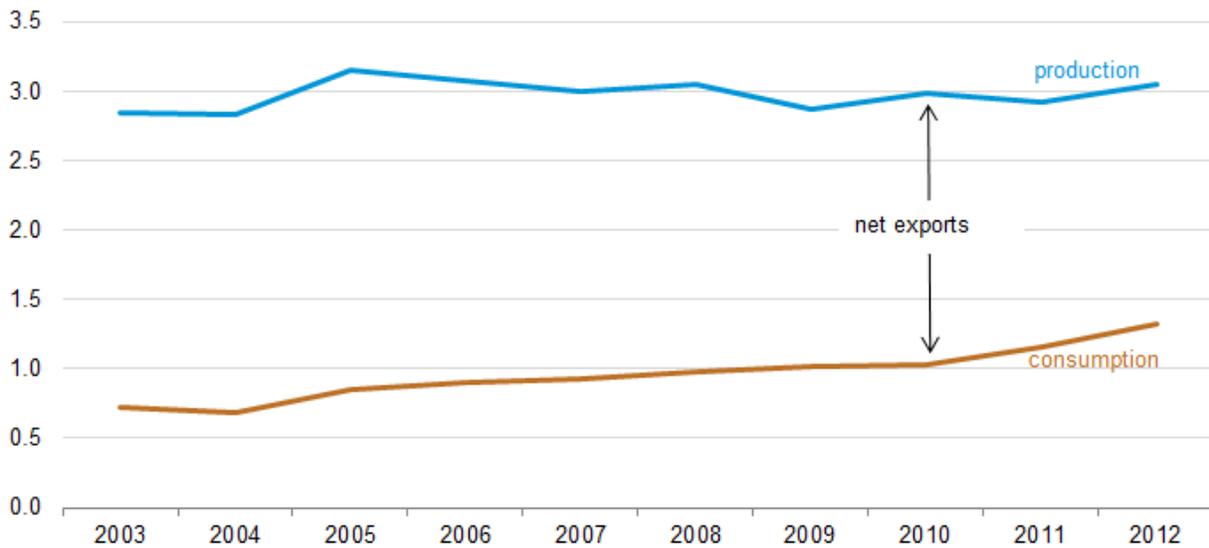
*Algeria's gross natural gas production was 6.4 Tcf in 2012, a 4% decline from the previous year. Production has steadily declined over the past decade as output from the country's large, mature fields is depleting. There are several new projects planned to come online, but they have repeatedly been delayed.*

Algeria's gross natural gas production was 6.4 Tcf in 2012, a 4% decline from the previous year. Algeria's gross production has been falling since its peak of 7.1 Tcf in 2008. The decline in 2012

mainly reflects fewer volumes of natural gas used to improve oil recovery by reinjecting it into wells.

### Dry natural gas production and consumption in Algeria

trillion cubic feet



 U.S. Energy Information Administration.

In 2012, 56% (3.6 Tcf) of gross production was marketed, 42% (2.7 Tcf) was reinjected into wells to enhance oil recovery, and 2% (0.1 Tcf) was vented or flared. Despite the decrease in gross production, the marketed volume increased in 2012 by 4% over the previous year. Dry natural gas (a sub-category of marketed gas that occurs when associated liquid hydrocarbons are removed) was 3.05 Tcf in 2012, of which 1.3 Tcf was consumed locally and 1.7 Tcf was exported.

Algeria has been planning to bring onstream several new natural gas fields to compensate for the loss of production from mature fields, but many of these projects have been delayed by several years, mostly because of delayed government approval, difficulties attracting investment partners, infrastructure gaps, and technical problems.

**Table 2: Upcoming Natural Gas Projects in Algeria**

Project Name	Companies	Peak Output (Bcf/y) <sup>1</sup>	Target Start Year
<b>South West Gas Project: Phase 1</b>			
Touat	GDF Suez/Sonatrach	160	2017
Reggane Nord	Repsol/Sonatrach/RWE/Edison	100	2017
Timimoun	Total/Sonatrach/Cepsa	55	2017
<b>South West Gas Project: Phase 2</b>			
Ahnet	Total/Sonatrach/Partex	140	2018
Hassi Ba Hamou	BG Group	70-110	--
Hassi Mouina	Statoil/Sonatrach	--	--
Timimoun expansion	Total/Sonatrach/Cepsa	--	--
<b>Other Gas Projects</b>			
In Salah (expansion) <sup>2</sup>	BP/Sonatrach	200	2016
Isarene (Ain Tsila)	Petroceltic/Sonatrach	130	2017

<sup>1</sup> Billion cubic feet per year is Bcf/y.

<sup>2</sup> Field expansion at In Salah is to ensure that the current level of output at In Salah is maintained.

Source: Arab Oil & Gas Directory, Middle East Economic Survey, Repsol, Total, and Oil & Gas Journal

Algeria is in the process of developing its Southwest Gas Project, which includes the Reggane Nord, Timimoun, and Touat projects, all of which are expected to start production at the earliest in 2017, at least three years behind the initial schedule. The Repsol-led Reggane Nord project consists of developing six fields and is expected to reach a peak production rate of 100 Bcf/y. The Timimoun project, led by Total in partnership with Sonatrach and Cepsa, is expected to reach a peak production of 60 Bcf/y, and the Touat project, led by the France-based GDF Suez in association with Sonatrach, is projected to reach a peak production of 160 Bcf/y. The Southwest Gas Project entails the construction of gas-gathering facilities, a gas treatment plant, and a pipeline to the Hassi R'Mel gas hub, called the GR5 pipeline. The planned infrastructure will connect the remote Southwest gas fields to the Hassi R'Mel region and allow for the commercialization of other fields in the south as well. The development and commercialization of the Ahnet natural gas project in the south will also depend on the new infrastructure.

The Southwest Gas Project is very important for Algeria's ability to meet contracted exports and its expected growth in domestic demand. Gross natural gas production in the country will most likely continue to steadily decline in the short term, but it may recover in the medium term if planned projects come online and offset natural declines. Output from the Southwest Gas Project and other proposed projects (some of which are not included in the table) have the potential to increase Algeria's output by 1 Tcf/y or more after 2018. However, these projects are contingent on attracting investors and building new infrastructure or upgrading older infrastructure.

## Midstream and downstream infrastructure

*Algeria exports natural gas via pipelines and on tankers in the form of liquefied natural gas (LNG). It has three transcontinental export gas pipelines: two transport*

natural gas to Spain and one to Italy. Algeria's LNG plants are located in the coastal cities of Arzew and Skikda. Algeria was the first country in the world to export LNG in 1964.

## Domestic pipelines

Algeria's domestic natural gas pipeline system transports natural gas from the Hassi R'Mel fields and processing facilities, owned by Sonatrach, to export terminals and liquefaction plants along the Mediterranean Sea. There are three main domestic pipeline systems: Hassi R'Mel to Arzew, Hassi R'Mel to Skikda, and Alrar to Hassi R'Mel. The Hassi R'Mel to Arzew system is a collection of pipelines that move natural gas from Hassi R'Mel to the export terminal and the LNG plant at Arzew. The system also includes an LPG pipeline. The Hassi R'Mel to Skikda system transports natural gas from the Hassi R'Mel fields to the Skikda LNG plant, and the Alrar to Hassi R'Mel system transports natural gas produced in the Alrar and the southeastern region to the Hassi R'Mel processing facilities. Sonatrach plans to build the GR5 Southwest fields to the Hassi R'Mel pipeline to monetize natural gas reserves in fields discovered in southwestern Algeria. The expected completion date is 2017.

## Transcontinental pipelines

one to Italy. The largest pipeline, Pipeline Enrico Mattei (GEM), came online in 1983 and runs 1,025 miles from Algeria to Italy via Tunisia. GEM's capacity is more than 1.3 Tcf/y and it is jointly owned by Sonatrach, the Tunisian government, and Eni. The Pedro Duran Farell (GPDF) pipeline started in 1996 and travels 325 miles to Spain via Morocco. GPDF's capacity is about 390 Bcf/y. The newest pipeline, MEDGAZ, came online in 2011 and is owned by Sonatrach, Cepsa, Endesa, Iberdrola, and GDF Suez. It stretches 125 miles onshore and offshore, from Algeria to Spain via the Mediterranean Sea.

**Table 3: Algeria's Transcontinental Natural Gas Pipelines**

Pipeline Name	Start Year	Route	Length (miles)	Capacity (Bcf/y)
Pipeline Enrico Mattei (GEM)	1983	Algeria to Italy via Tunisia	1,025	1,340
Pedro Duran Farell pipeline (GPDF)	1996	Algeria to Spain via Morocco	325	390
MEDGAZ Pipeline	2011	Algeria to Spain via the Mediterranean Sea	125	280
<b>Total export pipeline design capacity</b>				<b>2,010</b>
<b>Proposed Pipelines</b>				
GALSI Pipeline	--	Algeria to Italy	534	282
Trans-Saharan Gas Pipeline (TSGP)	--	Nigeria to Algeria via Niger	2,602	706 -1,059

Billion cubic feet per year is bcf/y.

Source: Sonatrach (with EIA conversions), IHS Cera, and Cedigaz.

## **Planned transcontinental pipelines**

Algeria plans to develop two additional transcontinental export pipelines, although both have suffered delays, and it is highly uncertain whether both pipelines will be built. The GALSI pipeline is planned to transport natural gas to Italy via a pipeline with a subsea section. Initially, its capacity is expected to be 282 Bcf/y. The pipeline project has gone through feasibility studies, and there are concerns about logistics, costs, pricing formulas, and long-term contractual commitments. The Trans-Saharan Gas Pipeline (TSGP) is proposed to run slightly over 2,600 miles to deliver natural gas from Warri, Nigeria to Algeria (via Niger), which will then link to the MEDGAZ route to Spain, although this link may be changed in the future. However, security concerns about militant groups across remote areas in the Sahel, in addition to growth constraints to Nigerian natural gas production, have presented considerable downside risks to investors interested in financing the project.

## **Liquefied natural gas (LNG) plants**

Algeria became the world's first LNG producer in 1964 when the Arzew LNG facility came online. In 2013, Algeria was the world's seventh-largest exporter of LNG, exporting about 5% of the world's total exports. Algeria has liquefaction units located along the Mediterranean Sea at Arzew and Skikda, with a total design capacity to process almost 3.2 Bcf per day of natural gas, according to PFC Energy. Sonatrach is building another LNG train at Arzew, with a planned capacity of 0.6 Bcf per day, to process natural gas output from the Gassi Touil project. Recent reports indicate that the plant may start exporting LNG in summer 2014.

## **Natural gas exports**

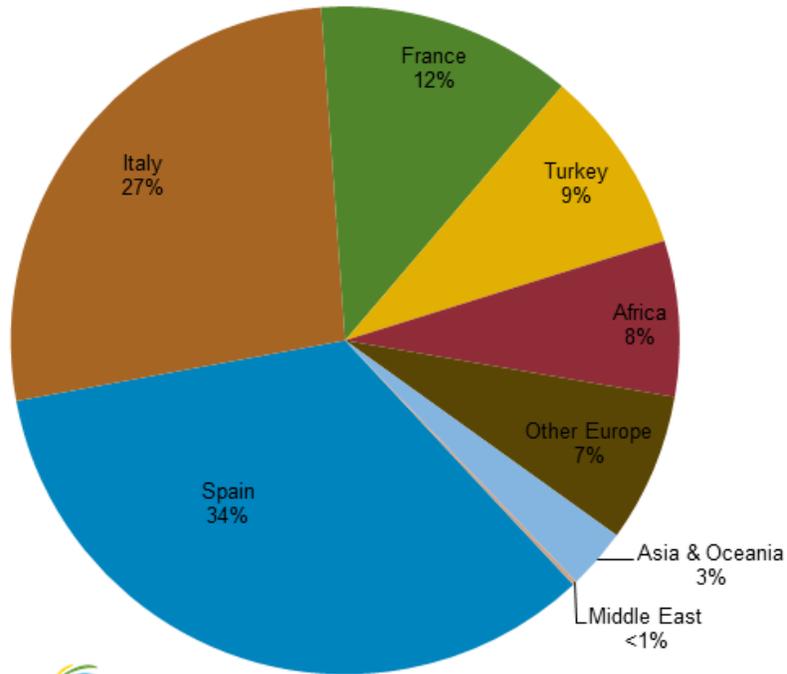
*Algeria exported more than 1.7 Tcf of natural gas in 2012, although preliminary 2013 data show that Algeria's natural gas exports fell by more than 10% to 1.5 Tcf in 2013. Approximately 90% of Algeria's natural gas exports were sent to Europe in 2012 and 2013, making it the region's second-largest natural gas supplier.*

Algeria exported more than 1.7 Tcf of natural gas in 2012, of which approximately 1.2 Tcf was transported via pipelines and 0.5 Tcf by LNG tankers. Algeria is Europe's second-largest natural gas supplier outside of the region, after Russia. In 2012, more than 90% of Algeria's pipeline exports were sent to Italy, Spain, and other European countries, and the remainder was sent to Morocco and Tunisia as payment in lieu of transit fees. Also, more than 90% of Algeria's LNG exports were sent to Europe, primarily to France, Turkey, and Spain, and the remainder was sent to markets in Asia and Oceania.

Recent estimates from the 2014 BP Statistical Review show that Algeria's natural gas exports declined to 1.5 Tcf in 2013 (1.0 Tcf pipeline and 0.5 Tcf LNG), more than 10% lower than the previous year. The decline mainly reflects a substantial decrease of pipeline exports to Italy. Nonetheless, BP's data still show that Algeria was Europe's second-largest natural gas supplier in 2013.

Overall, Algeria's natural gas exports have gradually declined over the past decade, as gross production decreases and domestic consumption increases. Despite new export LNG infrastructure and increased capacity, Algeria's LNG exports have declined over the past few years. Algeria is facing pressure to boost natural gas output with new projects to meet growing domestic demand and to fulfill long-term contractual obligations to export natural gas to Europe.

Algeria's natural gas exports, by destination, 2013



Source: BP Statistical Review, 2014

# Electricity sector

*Algeria's public utility, Sonelgaz, is pursuing a large-scale investment program to almost double electricity generation capacity in the next three to four years. The company has already made notable strides, as capacity increased by about one-third from 2011 to 2013. However, Sonelgaz faces some challenges as energy subsidies continue to affect its finances and as natural gas output has declined. Most of Algeria's planned capacity additions are from natural gas-fired plants.*

Algeria's electricity generation capacity reached 15.2 gigawatts (GW) at the end of 2013, up from 12.9 GW at the end of 2012 and 11.4 GW at the end of 2011, according to Sonelgaz, the country's public utility in charge of electricity generation and distribution. Sonelgaz has brought additional capacity online to keep up with demand needs. In the past, Sonelgaz has imposed rationing to balance electricity supply and demand. In 2012, the government enforced power cuts that provoked public protest in the summer months.

Net electricity consumption was 44 billion kilowatthours in Algeria in 2012, according to IHS Cera. Algeria's electricity consumption has increased by an annual average of roughly 10% from 2009 to 2012. The vast majority of generation capacity comes from gas-fired and combined-cycle plants, although the share of renewable energy in Algeria's generation mix is growing but still limited. According to the Electricity and Gas Regulation Commission (CREG), the country's electricity and gas market regulator, the national electricity system consists of an interconnected network that distributes power to northern and southern parts of the country. About 99% of Algeria's population is connected to the national grid.

Algeria's power demand peaks during the summer months, and demand is expected to reach 12.5 GW in the summer of 2014. Algeria's peak demand is expected to grow to 20 GW by 2017. As a result, Sonelgaz plans to add more than 12 GW of generating capacity by 2017-18. Sonelgaz recently awarded contracts for six combined-cycle gas turbines that are scheduled to begin operating in 2015, according to MEES. Sonelgaz signed two contracts for 23 solar photovoltaic projects, which are a part of a 400-megawatt (MW) solar capacity program that started in 2013, according to MEES. Also, Sonelgaz plans to commission a 12-turbine, 10 MW wind farm at Adrar this year, which is a pilot project for a wind capacity program that plans to bring online 639 MW by 2023.

Sonelgaz is planning to spend \$7.6 billion from 2014 to 2017 to increase generation capacity, not including costs for renewable projects, according to MEES. The public utility plans to spend an additional \$13.9 billion on the transmission and distribution system. One of Sonelgaz's main challenges is being able to finance the projects amid fixed electricity prices, which has an impact on the company's finances. According to MEES, energy subsidies in Algeria have resulted in deficits among Sonelgaz's transmission and distribution subsidiaries of nearly \$1.02 billion annually. Another challenge is natural gas supply. Most of Algeria's planned capacity additions are gas-fired units. However, Algeria's gross natural gas production has been declining as new projects slated to boost output have repeatedly been delayed.

# Notes

- Data presented in the text are the most recent available as of July 24, 2014.
- Data are EIA estimates unless otherwise noted.

# Sources

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